

### REMARKS

Initially, Applicants would like to thank the Examiner for the finding of allowable subject matter in Claims 35-38. In light of the foregoing Amendments and the following Remarks, Applicants respectfully request reconsideration of this application and allowance of the pending claims to issue.

Claims 7-13, 47-48, 50, 52, 54, 56, and 58-67 are withdrawn from further consideration as being drawn to a non-elected invention. Claims 1-6, 14-46, 49, 51, 53, 55, 57, 68, and 69 are pending and under consideration.

Claims 1, 17, 68, and 69 have been amended to replace the word "type" with the word "kind."

Claims 1, 68 and 69 have been amended to recite that the microemulsion is a single phase monomer in water microemulsion.

Claim 19 has been amended to delete the tradenames from the claim.

Claim 30 has been amended to recite amino phenylketone instead of amino ketone and to correct the typographical error in the benzyl to now recite benzil.

Claim 33 has been amended to recite a reduction potential instead of a reduced potential.

No new matter has been introduced by these Amendments.

#### I. ELECTION/RESTRICTION

The Office Action asserted that Claims 1, 2, 15-18, 24-27, and 40-69 are generic to a plurality of disclosed patentably distinct species. During a telephone conversation on April 12, 2005, Applicants' agent made a provisional election, with traverse, to prosecute a method of producing a polymer wherein the monomer is butyl acrylate, the functionalized end groups are hydroxy groups, the initiator is a two-component system comprising methylene blue and N-methyldiethanolamine, and the surfactant is sodium dodecyl sulfate. Applicants affirm this

election. Currently, Claims 1-6, 14-27, 31-38, 40-46, 49, 51, 53, 55, 57, 68, and 69 read on the elected species. Further, the Examiner has rejoined Claims 28-30 and 39. Applicants acknowledge that, upon allowance of a generic claim, Applicants will be entitled to consideration of claims to additional species as provided by 37 C.F.R. § 1.141.

## II. REJECTIONS UNDER 35 U.S.C. § 112

The Office rejected Claims 1, 15, 17, 19, 30, 33, 55, 59, 68, and 69 as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, the Office alleges that the use of the word “type” in Claims 1, 17, 59, 68, and 69 makes it unclear as to whether Applicants intend a “monomer-soluble radical active centers” or some other moiety of the same type. Applicants have amended Claims 1, 17, 68, and 69 (Claim 59 is withdrawn) as suggested by the Examiner, to replace the word “type” with the word “kind.” Accordingly, this rejection is believed to be overcome.

The Office Action alleges further that it is not clear which components are required to be present in the “water-soluble photo-initiator system” in order to produce a monomer soluble radical active center containing a “desired end group functionality” for a polymer or oligomer. The Office Action contends that the polymer end groups are derived from the co-surfactant rather than the photo-initiator.

The specification describes water-soluble photo-initiator system as systems that will yield a monomer soluble radical active center (see, for example, page 8, lines 3-13). These radical active centers enter the monomer droplets and initiate polymerization. Because these radical active centers initiate polymerization, they form a bond with the monomer and become an end group of the resulting polymer chain. Accordingly, which end group functionality one desires will determine which radical active center, and thus, which water soluble photo-initiator system one can use. Moreover, the specification at page 19, line 18, to page 24, line 12, describes various exemplary water-soluble photo-initiator systems and ways to select those that will provide a given monomer soluble radical active center, and thus polymer end group.

Furthermore, the Office Action's assertion that the end groups are the result of the co-solvent is incorrect. Example 2 describes the use of a water soluble photo-initiator system that comprises methylene blue and N-methyldiethanolamine. Upon irradiation, the photo-initiator system produces the monomer soluble radical active center  $\text{CH}_2\text{-N-(CH}_2\text{CH}_2\text{OH)}_2$ , which enters the monomer droplet, initiates polymerization. Accordingly, the end group of the resulting polymer is  $\text{-CH}_2\text{-N-(CH}_2\text{CH}_2\text{OH)}$ , an alcohol. This reaction is also shown schematically in Figure 3. Thus, the Office Action's assertion that Applicants have not taught any photo initiators that become end groups containing hydroxyl, *et al.*, is simply incorrect because Example 2 shows a photo initiator system that does result in hydroxyl end groups.

Applicants would like to also point out that Example 3 shows a system where a hydrogen abstraction photo-initiator system is used. In this case, the co-surfactant becomes monomer soluble reactive center and initiates polymerization (*see* Figure 5), thus becoming an end-group. Thus, the co-surfactant acts "as part of the photoinitiation system" page 36, lines 22-24.

The Office Action also contended that in Claims 15 and 55 it is not clear what is meant by the phrase "monomer is chosen for its preferred mode of termination." To this end, the specification at page 14, line 3 to page 15, line 13, describes the selection of a monomer for its preferred mode of termination as including the selection of a monomer that will produce a polymer having the desired functionality at one end or, alternatively both ends, of the polymer chain. Accordingly, contrary to the Office's assertion, Applicants have clearly set forth what is meant by the phrase "monomer is chosen for its preferred mode of termination" and, as such, the instant rejection should be withdrawn.

The Office Action also maintained that the tradenames in Claim 19 should be deleted. Accordingly, Applicants have amended Claim 19 to delete the subject tradenames.

The Office also suggests that recitation of the term benzyl in Claim 30 is unclear. Accordingly, Applicants have amended Claim 30 to recite benzil instead of benzyl. Further, the office also contends that recitation of "amino ketone" in Claim 30 should be amended to recite "amino phenylketone." Applicants have again amended Claim 30 pursuant to the Office's suggestion and thus believe the current rejection of Claim 30 has been overcome.

The Office has also rejected Claim 33 for alleged lack of clarity in the language “reduced potential” as set forth therein. Accordingly, Applicants have amended Claim 33 to recite a “reduction potential.” Thus, Applicants believe the current rejection of Claim 33 has been overcome.

### III. REJECTIONS UNDER 35 U.S.C. § 102(B)

Claims 1 and 68, and certain claims depending therefrom, have been rejected under 35 U.S.C. § 102(b) for allegedly lacking novelty on a number of grounds. To that end, in order for a reference to form the basis of a proper novelty rejection the reference must teach each and every feature of the claimed invention. As set forth below, the instant novelty rejections fail to satisfy this requirement and therefore must be withdrawn.

#### A. Capek (I)

The Office has rejected Claims 1 and 68 for allegedly lacking novelty in view of the teachings of Capek *et al.*, in the article “Kinetics of Photopolymerization of Butyl Acrylate in Direct Micelles” (hereinafter “Capek I”). Specifically, Capek I is directed to formation of polybutylacrylate from the polymerization of butyl acrylate monomer. To this end, the Office contends that the poly(butylacrylate) formed by Capek would have butyl groups as desired functional end groups and therefore anticipates Applicants claims.

The disclosure of Capek I is directed to conventional chain polymerization process in which one monomer attaches to a subsequent monomer thus forming a chain polymer. To that end, irrespective of whether or not the butyl end group of Capek I can be considered a desired functional end group, the butyl group of Capek I is provided by the butyl acrylate monomer. In contrast, Applicants Claims 1 and 68 recite, in part, a process whereby an initiator system produces monomer-soluble radical active center and wherein the radical active center contains the desired end group functionalities for a polymer or oligomer. Thus, the desired functional end group of Applicants claims is provided by the initiator system. Simply put, the disclosure of Capek I fails to teach or suggest a process whereby an initiator system produces monomer-soluble radical active center and wherein the radical active center contains the desired end group.

Accordingly, for at least this reason, Capek I fails to teach each and every feature of Applicants claims and, as such, the novelty rejection in view of same must be withdrawn.

**B. Capek (II)**

The Office has also rejected Claims 1 and 68 and certain claims depending therefrom for allegedly lacking novelty in view of the teachings of Capek in the article "Photopolymerization of Butyl Acrylate Microemulsions" (hereinafter "Capek II"). Capek II is similarly directed to the formation of polybutylacrylate from the polymerization of butyl acrylate monomer. To this end, the Office has once again suggested that Capek II discloses a process of photo-initiated radical formation that provides a poly(butylacrylate) having butyl groups as desired end groups.

The disclosure of Capek II is similarly directed to conventional chain polymerization process in which one monomer attaches to a subsequent monomer thus forming a chain polymer. Once again, irrespective of whether or not the butyl end group of Capek II can be considered a desired functional end group, the butyl group of Capek II is provided by the butyl acrylate monomer and not from an initiator system. In contrast, and as discussed above, Claims 1 and 68 of Applicants invention recite, in part, a process whereby an initiator system produces monomer-soluble radical active center and wherein the radical active center contains the desired end group functionalities for a polymer or oligomer. Thus, the disclosure of Capek II fails to teach or suggest a process whereby a desired end group functionality is provided by an initiator system. Accordingly, for at least this reason, Capek II also fails to teach each and every feature of Applicants claimed invention and, as such, the novelty rejection in view of same must be withdrawn.

**IV. REJECTIONS UNDER 35 U.S.C. § 103(A)**

Claims 1 and 68, and certain claims depending therefrom, have been rejected under 35 U.S.C. § 103(a) for allegedly being obvious an unpatentable on a number of grounds.

To that end, it is well settled in law that a *prima facie* case of obviousness requires that the art of record must teach or suggest the claimed invention as a whole and there must also be the requisite motivation to undertake the combination or modification proposed in the rejection.

As set forth below, the current obviousness rejections under section 103(a) fail to satisfy these requirements and therefore must be withdrawn.

**A. Kuo *et al.* in view of Morgan *et al.***

The Office has rejected Claims 1 and 68 as allegedly being obvious and unpatentable over the teachings of Kuo *et al.* from the article “Photoinitiated Polymerization of Styrene in Microemulsions” (hereinafter “Kuo”) alone or in combination with the teaching of Morgan *et al.* from the article “Kinetics and Mechanism of Microemulsion Polymerization of Hexyl Methacrylate” (hereinafter “Morgan”).

As amended, Claims 1 and 68 of the instant application recite, in part, forming a single phase monomer in water microemulsion comprising monomer, water, and an effective amount of an effective surfactant. A water soluble photo-initiator system is added to the microemulsion wherein the initiator system produces one kind of monomer-soluble radical active centers and wherein the radical active centers contain the desired end group functionalities for a polymer or oligomer. In contrast to the claimed invention, neither Kuo nor Morgan, alone or in combination, teach or even suggest a polymerization process that comprises a water soluble photo-initiator system.

The disclosure of Kuo reports on the photo-initiated polymerization of styrene in oil/water microemulsions using dibenzyl ketone (DBK) as the initiator. *See* Abstract. Significantly, dibenzyl ketone is not a water soluble photo-initiator. In fact, as acknowledged by Kuo, the study reported therein was based upon the use of an oil-soluble initiator, *i.e.*, the dibenzyl ketone, as the photoinitiator. *See* page 1220, col. 2, lines 48-49. Thus, for at least this reason, Kuo fails to teach or even suggest Applicants claimed invention as a whole.

The Office then goes on to make the unsupported allegation that it would have been obvious for one of skill in the art to seek additional guidance from the teachings of Morgan. More specifically, the Office suggests that it would have been obvious to one skilled in the art to add the water soluble initiator of Morgan to the monomer surfactant mixture taught by Kuo. However, irrespective of whether one of skill in the art would be motivated to combine the

teachings of Kuo and Morgan, (which one would not), the resulting combination still fails to arrive at a polymerization process that comprises the use of a water soluble photo-initiator.

Specifically, Morgan reports on the kinetic analysis of the microemulsion polymerization of hexyl methacrylate. To this end, the polymerization discussed therein is a thermal polymerization reaction. Thus, the initiators described and used therein are not photo-initiators but rather initiators which chemically decompose to provide water soluble free radicals. Accordingly, while Morgan does discuss the use of water soluble initiators, there is no suggestion or motivation to utilize water soluble photo-initiators. Thus, for at least these reasons, it is evident that the alleged combination of Kuo in view of Morgan fails to provide a polymerization process that comprises a water soluble photo-initiator and therefore fails to teach or even suggest Applicants invention as a whole.

Moreover, notably absent from the Office's rejection is the precise identification of a suggestion, teaching or motivation that would lead one of ordinary skill in the art to make the alleged combination. It is not enough to combine references without some objective reason to do so. Rather, to combine prior art references without evidence of such suggestion, teaching or motivation is an impermissible hindsight reconstruction and simply takes the inventor's disclosure as a blueprint for piecing together the prior art in an effort to defeat patentability. *See In re Dembiczak*, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999). Simply put, the motivation to combine references can not come from the invention itself. *See In re Oetiker*, 977 F.2d 1443, 1447, 24 USPQ2d 1443, 1446 (Fed. Cir. 1992).

As stated above, the Office contends that one of skill in the art would seek guidance from Morgan in order to incorporate a water-soluble initiator into the process taught by Kuo. However, the Office points to nothing in Kuo that suggests his polymerization process could be modified to incorporate a water soluble initiator rather than the oil-soluble initiator described therein. Similarly, the Office points to nothing that suggests the thermal polymerization process of Morgan could be modified to comprise the use a photo-initiator such as that taught by Kuo. Accordingly, in the absence of such precise identification of a suggestion, teaching or motivation in these prior art references, the Office has necessarily presented a rejection based solely on

improper hindsight reconstruction. Therefore, it is respectfully submitted that the Office has failed to present a *prima facie* case of obviousness and, as such, the current rejection of Claims 1, 68, and those claims depending therefrom must be withdrawn.

**B. U.S. Patent No. 6,096,795**

The Office has further rejected Claims 1 and 68, and certain claims depending therefrom, as allegedly being obvious and unpatentable in view of U.S. Patent No. 6,096,795 (hereinafter “Abusleme”). As stated above, a *prima facie* case of obviousness requires that the art of record must teach or suggest the claimed invention as a whole and there must also be the requisite motivation to undertake the combination or modification proposed in the rejection. Initially, the Office recognizes that Abusleme fails to teach or suggest Applicants claimed invention as a whole when it acknowledges that Abusleme at least fails to mention choosing an initiator system and an illumination scheme to produce a desired molecular weight for the resulting polymer. However, notwithstanding this deficiency, the Office then makes the unsupported allegation that it nonetheless would have been obvious to one skilled in the art at the time of the invention to select an illumination scheme that would provide a polymer having a desired molecular weight.

Notably absent from the Office’s rejection is the precise identification of a suggestion, teaching or motivation in Abusleme that would lead one of ordinary skill in the art to make the alleged combination.

It is not enough to combine references without some objective reason to do so. Rather, to combine prior art references without evidence of such suggestion, teaching or motivation is an impermissible hindsight reconstruction and simply takes the inventor’s disclosure as a blueprint for piecing together the prior art in an effort to defeat patentability. *See In re Dembiczak*, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999). Simply put, the motivation to combine references can not come from the invention itself. *See In re Oetiker*, 977 F.2d 1443, 1447, 24 USPQ2d 1443, 1446 (Fed. Cir. 1992).

While Abusleme admittedly discloses that the source of radiation can be deactivated to stop the polymerization reaction in the event of polymerization runaway, there is no suggestion



or motivation in Abusleme to utilize a predetermined illuminating scheme in order to arrive at a polymer having a particularly desired molecular weight. Accordingly, in the absence of such precise identification of a suggestion, teaching or motivation in this reference, the Office has necessarily presented a rejection based solely on improper hindsight reconstruction. Therefore, it is respectfully submitted that the Office has failed to present a *prima facie* case of obviousness and, as such, the current rejection of Claims 1, 68, and those claims depending therefrom, in view of Abusleme must be withdrawn.

**C. U.S Patent No. 5,952,398 in view of 6,709,716 and 4,956,400**

The Office has also rejection Claims 1 and 68 and certain claims depending therefrom as allegedly being obvious over the teachings of U.S Patent No.: 5,952,398 ( hereinafter “Dietz”) in view of U.S. Patent Nos.: 6,709,716 (hereinafter “Uy”) and 4,956,400 (hereinafter “Kozakiewicz”). However, as set forth below, the disclosure of Dietz in view of Uy and Kozakiewicz fail to teach or suggest Applicants claimed invention as a whole and similarly lack the requisite motivation required to make the alleged combination thereof.

As amended, Claims 1 and 68 now recite, in part, forming a single phase monomer in water microemulsion comprising monomer, water, and an effective amount of an effective surfactant. In contrast to the claimed invention, the disclosure of Dietz is directed to the formation of polymerized bi-continuous phase microemulsion thus resulting in the formation of a bi-continuous phase polymer having structural integrity throughout both continuous phases. Significantly, Dietz teaches that neither phase is a dispersed phase and, as such, neither phase is separable from the other phase. *See* Col. 4, lines 20-26. It is further apparent from the teaching of Dietz that his bi-continuous phase microemulsion is critical to achieving the various advantages sought therein. For example, the bi-continuous phase microemulsion can provide a resulting product having a continuous phase of pressure sensitive adhesive properties and a continuous phase of hydrophilic polymer properties. Accordingly, for at least this reason, Dietz not only fails to teach or suggest the formation of a single phase microemulsion but actually teaches away from a single phase microemulsion altogether.

The relevant disclosure of Uy is similarly directed to a method for making a bi-continuous pressure sensitive adhesive. To this end, the process of Uy also relies on the polymerization of a bi-continuous phase microemulsion to achieve the various advantages sought therein. More specifically, as in Dietz, Uy's polymerization of a bi-continuous phase microemulsion provides the resulting polymerized pressure sensitive adhesive having a bi-continuous structure. Accordingly, for at least this reason, the disclosure of Uy also fails to teach or suggest the formation of a single continuous phase microemulsion and actually teaches away from any single phase microemulsion polymerizations. Thus, even assuming *arguendo* that one of skill in the art would seek to combine these disclosures, it is evident that the resulting combination of Dietz and Uy would fail to arrive at the formation of a single phase monomer in water microemulsion.

Notwithstanding the fact that the alleged combination of Dietz and Uy fail to teach or even suggest a single continuous phase microemulsion, the Office seeks further guidance from the disclosure of Kozakiewicz. However, notably absent from the Office's proposed combination is the precise identification of a suggestion, teaching or motivation that would lead one of ordinary skill in the art to combine these disclosures. To this end, contrary to the Office's assertion, the skilled artisan would not have been motivated at the time of the invention to combine these divergent disclosures.

As previously described, the disclosures of Uy and Dietz are directed to the formation of inseparable bi-continuous structure pressure sensitive adhesives. To this end, both Uy and Dietz teach that their polymerization process results in an inseparable bi-continuous matrix. In contrast, Kozakiewicz is directed to the formation of functionalized polymer microparticles having particle diameters of from about 200 to about 4000 angstroms. *See Abstract*. Contrary to the inseparable bi-continuous structures of Dietz and Uy, the polymer microparticles of Kozakiewicz are isolated as individual or a limited number of polymer molecules in each aqueous emulsion micelle. *See Col. 2, lines 55-68*. Simply put, one of skill in would not be motivated to combine the disclosure of a reference directed to the formation of an inseparable bi-continuous polymeric matrix formation with a reference that teaches the formation of isolated polymer microparticles having particle diameters of from about 200 to about 4000 angstroms.

Accordingly, in the absence of such precise identification of a suggestion, teaching or motivation in these prior art references, the Office has necessarily presented a rejection based solely on improper hindsight reconstruction. Therefore, it is respectfully submitted that the Office has failed to present a *prima facie* case of obviousness and, as such, the current rejection of Claims 1, 68, and those claims depending therefrom must be withdrawn.

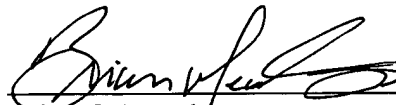
**CONCLUSION**

In view of the foregoing Amendments and Remarks, it is respectfully asserted that the rejections set forth in the Office Action of April 22, 2005 have been overcome and that the application is in condition for allowance. Therefore, Applicants respectfully seek notification of same.

Should the Examiner have any questions regarding this Amendment, or which may advance the efficient prosecution of the application, the Examiner is courteously invited to contact the undersigned at the telephone number and address listed below.

Respectfully submitted,

NEEDLE & ROSENBERG, P.C.



Brian C. Meadows  
Registration No. 50,848

NEEDLE & ROSENBERG, P.C.  
Customer No. 23859  
(678) 420-9300 Phone  
(678) 420-9301 Fax

**CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8**

I hereby certify that this correspondence, including any items indicated as attached or included, is being deposited with the United States Postal Service as first class mail in an envelope addressed to: MAIL STOP AMENDMENT, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below.

Brian C. Meadows

Date

10-24-2005